EXHIBIT 13A

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
RADIO AND TELEVISION

ROBERT L. HAMMETT, P.E.
EDWARD EDISON, P.E.
Consultants to the Firm

WILLIAM F. HAMMETT, P.E.
HARRISON J. KLEIN, P.E.
DANE E. ERICKSEN, P.E.
GERALD E. SPILLMAN, P.E.
GERHARD J. STRAUB, P.E.
STANLEY SALEK
NATHAN HAMILTON

October 26, 1992

Ms. Susan Valinoti
IEEE Standards Development Secretary
Institute of Electrical and Electronics Engineers, Inc.
445 Hoes Lane
Piscataway, New Jersey 08855-1331

Dear Susan:

Enclosed is my completed registration form and charge authorization to cover pre-registration for the IEEE Standards Coordinating Committee 28 (SCC28) meeting in San Diego on November 12 and 13. Although I am not a member of that Committee, I understand that as a consulting engineer whose work involves non-ionization radiation issues I may participate in the SCC28 discussions as an interested guest.

I appreciate this opportunity, and I look forward to meeting you and the other SCC28 members.

Sincerely,

Dane E. Ericksen

mk

Enclosure

cc: Mr. James B. Hatfield, P.E., Hatfield & Dawson
Mr. Jules Cohen, P.E., Jules Cohen & Associates
Mr. Richard A. Tell, Richard Tell Associates, Inc.
Dr. Robert F. Cleveland, Jr., FCC

RLH	WFH	DE	GJS	NH
EE	HK	GES	SS	JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	
File GE150				

GE-150

Telephone:
(415) 342-5200 San Francisco
(202) 396-5200 DC • (415) 342-8482 Facsimile

Mail:
Box 280068
San Francisco, California 94128-0068

Shipping:
1400 Rollins Road
Burlingame, California 94010-2304

SCC28 MAIN

Please fill out and RETURN WITH PAYMENT to:

Susan Valinoti
I.E.E.E. Standards
I.E.E.E.
445 Hoes Lane
Piscataway, NJ 08855-1331

In order to help us determine the correct number of attendees, as well as help the meeting start on time, we ask that you mail in your payment of $25 prior to attending the I.E.E.E. SCC28 Meeting. Please note that all registration fees received after November 9, 1992, will be assessed an additional $5.00 surcharge for a total registration fee of $30.00.

I.E.E.E. SCC28 Meeting, November 13, 1991

I WILL ATTEND X

I WILL NOT ATTEND _____

TYPE OF PAYMENT ENCLOSED:
VISA/MASTERCARD: ____ ____ ____ ____
expires_____

AMERICAN EXPRESS:

TRAVELERS, COMPANY, BANK OR PERSONAL CHECK: _____
(Enclosed - Make payable to I.E.E.E.)

Please print your name and address below:

Name: DANE E. ERICKSEN

Company: HAMMETT & EDISON, INC.

Address: BOX 280068

SAN FRANCISCO, CA 94128-0068

Remember, the pre-registration deadline is November 9, 1992

EXHIBIT 13B

notes on dee attendence of SC 2 and SC4 meetings of SCC28, 921112, San Diego

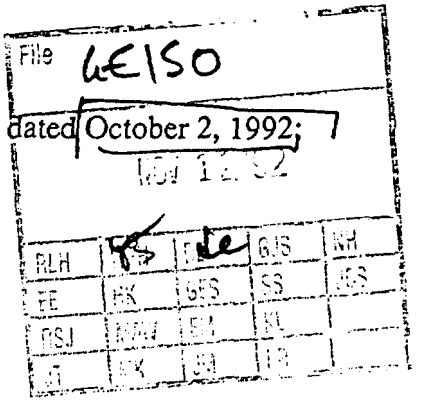
dee statement:

My name is Dane E. Ericksen, of Hammett & Edison, Inc., Consulting Engineers, w/ offices near San Francisco. I am not a member of this subcommittee, but, ~~and~~ as an engineer who designs broadcast stations and conducts RFR studies and surveys at broadcast sites, to determine compliance with ANSI C95.1-1982, which the FCC adopted in 1986, any successor standard to ANSI is of great interest and potential impact to us.

I have been informed by Ms. Beth Summerville of ANSI that balloting by ANSI concerning its adoption of IEEE C95.1-1991 as a successor to ANSI C95.1-1982 has been placed on hold pending more information on certain aspects of the IEEE standard. Ms. Summerville indicated I would have to contact the standard developer directly to find out those aspects of the IEEE standard the ANSI voting members were requesting more information on. My October 20 letter to Dr. Gandhi, requesting this information, has not received a response.

Would it be possible to hear, in detail from this subcommittee, which aspects of the IEEE standard ANSI has ~~are~~ requested further information on? I would particularly interested to know if ANSI's rejection, or failure to adopt, IEEE C95.1-1991 in its initial evaluation, is based on the controversy regarding a conducted current standard that extends to 100 MHz, thereby including VHF low band TV stations and approximately half of all FM stations.

R. C. Pererson- showed ~~by~~ me ANSI's request for more info letter, dated October 2, 1992; two issues



1. As standard is a safety standard, the BSR was concerned as to whether there was representation and support from safety experts or regulator agencies. Please provide BSR with list of members, with interest catergory identified. Also please provide a copy of the final voting tally of SC4.

2. In the April 19, 1991 comments of Mr. Swicord, he alleged "A membership committee was adopted to consider a proper balance of representatives. To my knowledge this committee was never formed. It is generally recognized that the current membership is not balanced in representing government, industry, and the general public." How did the committee respond? Is this an outstanding issue?

[copied by hand by dee, from letter shown to dee by R.C. Petersen]

AT&T
Bell Laboratories

R. C. Petersen
Nonionizing Radiation Mgr.
Consulting Engineer
Radiation Protection Dept.

Room 1F101C
600 Mountain Avenue
Murray Hill, NJ 07974
908 582-6442
FAX 908 582-7874

GE/SO
921112

SUBCOMMITTEE 4 MEETING
November 12, 1992
10:00 a.m. - Noon

1. Call to Order
2. Approval of the Agenda
3. Approval of June 1992 minutes
4. Secretary's report (Petersen)
   a. Update of Membership/Transnational membership
   b. Liaison members
   c. ANSI review of C95 Standards
   d. Rules
5. Organization of working groups (Adair)
6. Review of the new PAR
7. Issues for the next revision
8. Comments from the Subcommittee members (Gandhi)
9. Other business
10. Next meeting — June 13-17 1993
11. Adjourn

32 attendees (including dee)

dee presentation

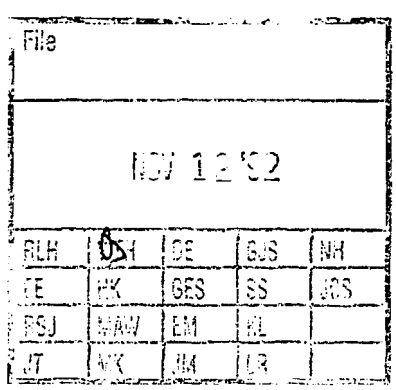


EXHIBIT 13C

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
RADIO AND TELEVISION

ROBERT L. HAMMETT, P.E.
EDWARD EDISON, P.E.
Consultants to the Firm

WILLIAM F. HAMMETT, P.E.
HARRISON J. KLEIN, P.E.
DANE E. ERICKSEN, P.E.
GERALD E. SPILLMAN, P.E.
GERHARD J. STRAUB, P.E.
STANLEY SALEK
NATHAN HAMILTON

RLA	WFH	DEE	GJS	NH
EE	HK	GES	SS	JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	
File	GEISO			

November 17, 1992

Mr. Jules Cohen, P.E.
Jules Cohen & Associates, P.C.
1725 DeSales Street, N.W., Suite 600
Washington, D.C. 20036-4406

Dear Jules:

This is in response to your September 14 letter, regarding our opposition to ANSI's adoption of the IEEE C95.1-1991 Standard. I had delayed responding to your letter until after my attendance at the Subcommittee 4 ("SC-4, Safety Levels and/or Tolerances with Respect to Personnel") meeting of the IEEE Standards Coordinating Committee 28 (SCC28, "Non-Ionizing Radiation") meeting on November 12 in San Diego. As you know, I am not a member of SC-4, but we felt that the cost of sending a Hammett & Edison representative to that meeting was justified, given our concerns regarding IEEE C95.1-1991. Since I did not see you at that meeting, I will fill you in on several surprising, if not shocking, pieces of information I found out about the status of IEEE C95.1-1991, and its adoption by ANSI.

First, I found out that my September 5, 1990, letter which first raised our concerns about the 100 MHz cutoff for the conducted body current portion of the then draft IEEE standard, sent to Mr. John J. Woods, then the SCC 28 Secretary, was never forwarded to Dr. Gandhi, who co-chairs the SC-4 Subcommittee! Your letter had characterized our objection to the IEEE C95.1-1991 Standard as an "eleventh hour" objection. I felt that characterization was unfair, given our attempt to raise this issue over two years earlier. I now understand why we never received a response from the SC-4 Subcommittee, and why our objections apparently fell on deaf ears. Not that this in any way excuses Mr. Woods' failure to forward our letter to the SC-4 Subcommittee, and the fact that, through no fault of ours, significant input from a potentially affected party was apparently never considered by SCC28.

Second, I found out that the unresolved issues that had caused ANSI to place its balloting on adoption of IEEE C95.1-1991 "on-hold", pending receipt of additional information from IEEE, were twofold: one involved the makeup of the SC-4 members, their areas of interest, and the final voting tally of the SC-4 Subcommittee. The second issue involved a protest filed on April 19, 1991 by Dr. Mays Swicord, a member of SCC28 and SC-4, alleging that the SC-4 membership was not balanced in representing government, industry, and the general public. Incredibly, no mention was made of our February 20, 1992, letter that formally and timely objected to ANSI's proposed adoption of IEEE C95.1-1991.

Telephone:
(415) 342-5200 San Francisco
(202) 396-5200 DC • (415) 342-8482 Facsimile

Mail:
Box 280068
San Francisco, California 94128-0068

Shipping:
1400 Rollins Road
Burlingame, California 94010-2304

Dr. Gandhi's July 23, 1992 letter to me,[1] in response to our objection to ANSI's adoption of IEEE C95.1-1991, listed only one paper[2] modeling conducted body currents above 50 MHz. That paper limited its study to a single-size man model, found discrepancies between calculated versus measured absorption currents, and concluded "Further work is certainly needs to resolve this discrepancy".[3] Figure 9 from that paper shows the model as predicting a dramatic fall-off of induced currents for frequencies above 80 MHz, so it would seem that terminating the conducted body current portion of the IEEE C95.1-1991 at 88 MHz, and thus at least excluding FM stations, would certainly have been justified. The inclusion of a conducted body current standard, means, for the first time, that VHF/FM site compliance depends not on just the measured E or H fields, but also upon the *size* of the human being in those fields. This is potentially very troublesome. The impact to on-tower exposure studies is obvious, and likely to result in even more difficulty for broadcast stations located at multi-station sites.

We think it unfortunate that IEEE C95.1-1991 extends a conducted body current standard to include VHF TV and FM stations, apparently on the basis of a single paper. As noted by Jane Clemmensen in her book *Nonionizing Radiation: A Case for Federal Standards?*,

> One side effect of setting standards that are based on premature or unfounded science and analysis might be public and private fixation on whichever standard or threshold is selected. Once a "number" is promulgated, even if it is obfuscated in complex mathematical formulations, it will be remembered and cited until a new threshold is introduced and a revision is adopted. Emerging from this sociopolitical process, any new threshold will be almost inevitably more stringent; the process rarely reverses itself.[4]

Nevertheless, it now seems inevitable that ANSI will adopt IEEE C95.1-1991 as a successor to ANSI C95.1-1982, even though it appears to us that this adoption is being done in violation of ANSI's own protocols designed to ensure input from all interested parties. Frankly, Jules, I think that ANSI's probable adoption of a standard that creates a new and, in our opinion, unjustified burden for VHF low band TV stations and approximately half of the FM stations in this county, is the real disservice to the industry. While I realize that we will have another opportunity to object to this ill-conceived portion of the IEEE C95.1-1991 Standard when the FCC opens its rule making, I fear that the FCC may find it difficult to "cherry pick" portions of a safety standard. Rather than an unnecessary additional regulatory burden being placed on half of all FM stations, I fear that the FCC will find it expedient to extend the conducted current portion of the IEEE Standard to all FM stations.

---

1 We did not receive Dr. Gandhi's letter until August 17, 1992, because of a transposed zip code used by IEEE in forwarding that letter to us.

2 *RF Currents Induced In an Anatomically-Based Model of a Human for Plane-Wave Exposures (20-100 MHz)*, by Jin-Yuan Chen and Om P. Gandhi. Health Physics, Vol. 57, No. 1, July 1989, pp 89-98.

3 *Ibid*, page 94.

4 *Nonionizing Radiation: A Case for Federal Standards?*. San Francisco Press, Inc., 1984, Page 19.

The one ray of hope I heard at the SC-4 meeting was that the Subcommittee anticipates that "interpretations" of the new standard will likely be needed, and that the practical concerns I raised could be addressed in that venue. While a better-written standard might not have needed continuing work to interpret what it was intended to mean, I have accepted Dr. Gandhi's invitation to join the SC-4 Subcommittee, with the hope that the inconsistencies and impracticalities can be addressed by that approach.

I am enclosing several graphics I prepared that compare the new IEEE C95.1-1991 Standard to the old ANSI C95.1-1982 Standard, which I thought you might find useful. You, and those receiving copies of this letter, are free to use them as you see fit, so long as each is used in its entirety. I look forward to working with you on the SC-4 Subcommittee in the future.

Sincerely,

Dane E. Ericksen

tc

Enclosures (8)

cc: ANSI Board of Standards Review (w/encls.)
Dr. Eleanor R. Adair
Dr. Thomas F. Budinger
Dr. Robert F. Cleveland, Jr.
Ms. Linda A. Gargiulo
Dr. Om P. Gandhi
Mr. James B. Hatfield, P.E.
Christopher D. Imlay, Esq.
Mr. Michael S. Newman
Dr. John M. Osepchuk
Mr. Ronald C. Peterson
Marnie K. Sarver, Esq.
Dr. Mays L. Swicord
Mr. Richard A. Tell

EXHIBIT 14

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
RADIO AND TELEVISION

ROBERT L. HAMMETT, P.E.
EDWARD EDISON, P.E.
Consultants to the Firm

WILLIAM F. HAMMETT, P.E.
HARRISON J. KLEIN, P.E.
DANE E. ERICKSEN, P.E.
GERALD E. SPILLMAN, P.E.
GERHARD J. STRAUB, P.E.
STANLEY SALEK
NATHAN HAMILTON

November 17, 1992

Dr. Eleanor R. Adair
Co-Chair, SC-4 Subcommittee
c/o J.B. Pierce Laboratory, Inc.
290 Congress Avenue
New Haven, Connecticut 06519

REH	WFH	DE	GJS	NH
EE	HK	GES	SS	JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	
File GEISO				

Dr. Om P. Gandhi
Co-Chair, SC-4 Subcommittee
c/o University of Utah
Department of Electrical Engineering
3280 Merrill Engineering Building
Salt Lake City, Utah 84112

Dear Doctors Adair and Gandhi:

Pursuant to the offer extended to me in Dr. Gandhi's July 23 letter, and re-affirmed verbally at the November 12 SC-4 Subcommittee meeting in San Diego, Hammett & Edison, Inc., Consulting Engineers, hereby applies for membership on the SC-4 Subcommittee. I would be the Hammett & Edison engineer primarily involved in the SC-4 Subcommittee work, although from time to time William F. Hammett, or another Hammett & Edison engineer, might attend SC-4 Subcommittee meetings in my stead.

As you may know, Hammett & Edison, Inc. is a professional service corporation that provides consultation to commercial and governmental clients on communications, radio, television, and related engineering projects. The technical staff comprises seven engineers, which is supported by drafting, secretarial, and accounting personnel. Specialized computer, instrumentation, and laboratory facilities are provided as required for the projects undertaken.

We have been very active in the field of radio frequency radiation (RFR) measurements, particularly as they apply to broadcast stations. We provided input to the FCC when it was preparing its Office of Science and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation" (OST65), and we were responsible for a new categorical exclusion being adopted by the FCC for stations that do not by themselves exceed 1% of the ANSI C95.1-1982 Standard under certain measurement conditions (FCC General Docket 88-469, effective April 18, 1990). We have performed RFR surveys or calculations at numerous broadcast sites, such as the Sutro Tower in San Francisco, the San Bruno Mountain antenna farm south of San Francisco, the Mt. Wilson antenna farm near Los Angeles, the South Mountain Park antenna farm near Phoenix, the Walnut Grove antenna farm near Sacramento, the Farnsworth Peak antenna farm near Salt Lake City, Mt. Soledad in San

Telephone:
(415) 342-5200 San Francisco
(202) 396-5200 DC • (415) 342-8482 Facsimile

Mail:
Box 280068
San Francisco, California 94128-0068

Shipping:
1400 Rollins Road
Burlingame, California 94010-2304

Diego, the Senior Road antenna farm near Houston, and the Tucson Communications Company antenna farm near Tucson, to name just a few.

William F. Hammett, P.E., of our firm has co-authored the chapter on RFR compliance for the recently published Eighth Edition of the National Association of Broadcasters (NAB) Engineering Handbook. I have appeared on several national RFR workshops panels sponsored by the NAB and the Society of Broadcast Engineers (SBE), and my name appears on page (i) of OST65. We therefore have considerable experience in RFR issues and great interest in the development and interpretation of RFR standards that apply to broadcast stations.

Please provide me with any necessary information on the SC-4 Subcommittee protocols, and the date and location of the next scheduled meeting. I look forward to working with you both and the other members of the SC-4 Subcommittee.

Sincerely,

Dane E. Ericksen

tc

cc: ANSI Board of Standards Review
Dr. Thomas F. Budinger
Dr. Robert F. Cleveland, Jr.
Mr. Jules Cohen, P.E.
Ms. Linda A. Gargiulo
Mr. James B. Hatfield, P.E.
Dr. John M. Osepchuk
Mr. Ronald C. Petersen
Dr. Mays L. Swicord
Mr. Richard A. Tell

EXHIBIT 15

ANSI
American National
Standards Institute 11 WEST 42ND STREET, NEW YORK, NEW YORK 10036
TEL. 212.642.4900
FAX: 212.398.0023
Cable: Standards, New York
International Telex: 42 42 96 ANSI UI
D-U-N-S 07-329-4837

Ms. Linda A. Gargiulo
Institute of Electrical
and Electronics Engineers
445 Hoes Lane
P. O. Box 1331
Pistcataway, NJ 08855-1331

Date: November 20, 1992
Our Ref: BSR LB 2850 & 2850A

Dear Ms. Gargiulo:

Notification of Approval of Standard

The Board of Standards Review of the American National Standards Institute has approved as American National Standard the following:

ANSI/IEEE C95.1-1992 Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz (revision and redesignation of ANSI C95.1-1982)
Approval Date: November 18, 1992

It will be appreciated if you would print the standard in accordance with the ANSI Style Manual, copies of which are available from our Publications Department. If it is not possible to do this, the official ANSI designation, which is shown above the title, should appear on the cover of the approved standard along with the date of ANSI approval, preferably in the upper right corner.

As soon as printed copies are available, the Institute would appreciate receiving 6 complimentary copies, addressed to my attention, for ANSI administrative purposes.

Please inform appropriate personnel of this approval -- officers of standards committee, members of the balloting group, other secretariat, the organization which has the responsibility for printing the standard, etc. The Institute will insert a notice of approval in a forthcoming issue of Standards Action.

In accordance with BSR Procedures, those objecting to this approval are hereby notified of their right of appeal which must be filed in writing with the Chairman of the BSR within 15 working days after receipt of this notification. The appeal must be based on due process or lack of consensus and include a statement as to why the BSR action should be modified. The BSR will not render decisions on the relative merits of technical matters, but it shall consider whether due process was afforded technical concerns.

Sincerely,

Beth Somerville

Beth Somerville, Secretary
Board of Standards Review

File
NOV 24 '92

RLH	WGH	DE	GJS	
EE	HK	GES		JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	

BS/B/0558X

Copy to: SB Chairman
SB Secretary
M. L. SWICORD (FDA)
M. R. ALTMAN (FDA)
D. E. ERICKSEN (HAMMETT & EDISON, INC.)

EXHIBIT 16

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
RADIO AND TELEVISION

ROBERT L. HAMMETT, P.E.
EDWARD EDISON, P.E.
Consultants to the Firm

WILLIAM F. HAMMETT, P.E.
HARRISON J. KLEIN, P.E.
DANE E. ERICKSEN, P.E.
GERALD E. SPILLMAN, P.E.
GERHARD J. STRAUB, P.E.
STANLEY SALEK
NATHAN HAMILTON

BY FEDERAL EXPRESS

December 10, 1992

RLH	WFH	DE	GJS	
EE	HK	GES	SS	JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	
File GE150				

Ms. Beth Somerville, Secretary
Board of Standards Review
American National Standards Institute
11 West 42nd Street
New York, New York 10036

Re: ANSI/IEEE C95.1-1992
Ref: BSR LB 2850 & 2850A

Dear Ms. Somerville:

This is in response to your *Notification of Approval of Standard* dated November 20, 1992, which we received on November 24, advising that on November 18 the Board of Standards Review (BSR) of the American National Standards Institute (ANSI) approved ANSI/IEEE C95.1-1992, *Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, as a revision and redesignation of ANSI C95.1-1982. Your notification advised that an appeal based upon lack of due process or lack of consensus of the action could be filed within 15 working days of receipt of the notice. This letter is our appeal; it so alleges and is timely filed.

We believe that due process was not provided because we have learned that our September 5, 1990, letter which first raised our concerns about the 100 MHz cutoff for the conducted body current portion of the then draft IEEE C95.1-19__ standard, sent to Mr. John J. Woods, then the IEEE Standards Coordinating Committee 28 (SCC28) Secretary, was never forwarded to Dr. Om Gandhi, who co-chairs the SC-4 *Safety Levels and/or Tolerances with Respect to Personnel* Subcommittee of SCC28. We also believe that due process was not provided in that there were at least two unresolved objections (filed by C.S.I. Telecommunications ("CSI") and by us) still pending against the proposed adoption of IEEE C95.1-1991 at the time the BSR nevertheless voted to adopt that standard as a successor to ANSI C95.1-1982. Please refer to my timely filed letters of February 20, April 17, and August 31, 1992, and to the June 18, 1992, CSI letter (copy attached, for convenience). I am informed by Mr. Michael Newman of CSI that no response to their objection was ever received.

We do not feel there is a consensus in the broadcasting field that the conducted body current portion of the ANSI/IEEE C95.1-1992 Standard is warranted for VHF and FM broadcast stations. Certainly, the 100 MHz termination point for the conducted body current standard, in the middle of the FM broadcast band, is totally inappropriate. As evidence of that lack of consensus, we are attaching two letters just received from major

Telephone:
(415) 342-5200 San Francisco

Mail:
Box 280068
San Francisco, California 94128-0068

Shipping:
1400 Rollins Road
Burlingame, California 94010-2304

radio station group owners. As word of the ANSI action spreads, I would expect the lack of industry consensus regarding ANSI C95.1-1992 to become even more evident.

Interestingly, we note that the 1991 Canadian Safety Code 6, *Limits of Exposure to Radiofrequency Fields at Frequencies from 10 kHz-300 GHz*, published by the Environmental Health Directorate, Health Protection Branch, Government of Canada, addresses contact currents. However, the termination point in that standard is *30 MHz* – similar to the 40 MHz cutoff point suggested in our April 17 letter to you.

We regret the necessity to file this appeal, as we recognize the many hours contributed by members of the SC-4 Subcommittee that went into developing the IEEE C95.1-1991 Standard. It is indeed unfortunate that SCC28 chose to ignore our 1990 letter pointing out fundamental problems with the 100 MHz cutoff proposed by the then draft IEEE standard; indeed, it is for that reason that we have now asked for membership on the SC-4 Subcommittee.

Sincerely,

Dane E. Ericksen

jk
Enclosures (3)

cc: Dr. Eleanor R. Adair (w/ encls.)
Mr. Kenneth J. Brown, Capital Cities/ABC, Inc. (w/ encls.)
Dr. Thomas F. Budinger (w/ encls.)
Mr. Michael V. Chiarvilli, P.E., Capital Cities/ABC, Inc. (w/encls.)
Dr. Robert F. Cleveland, Jr., FCC (w/ encls.)
Mr. Jules Cohen, P.E. (w/ encls.)
Mr. Robert Dieterick, *Microwave News* (w/ encls.)
Dr. Om P. Gandhi (w/ encls.)
Ms. Linda A. Gargiulo (w/encls.)
Mr. James B. Hatfield, P.E. (w/ encls.)
Christopher D. Imlay, Esq. (w/ encls.)
Mr. Charles T. Morgan, Susquehanna Radio Corp. (w/encls.)
Mr. Michael S. Newman, C.S.I. Telecommunications (w/ encls.)
Dr. John M. Osepchuk (w/ encls.)
Mr. Ronald C. Petersen (w/ encls.)
Mr. Michael C. Rau, NAB (w/ encls.)
Mr. William F. Ruck, Radio Stations KNBR/KFOG(FM) (w/ encls.)
Dr. Mays Swicord (w/ encls.)
Mr. Richard A. Tell (w/ encls.)

TEL: (415) 751-8845
FAX: (415) 387-7201

COPY

C.S.I. TELECOMMUNICATIONS
MICROWAVE AND RADIO SYSTEM ENGINEERS
P.O. BOX 29002 SAN FRANCISCO, CA 94129

June 18, 1992

Board of Standards Review
American National Standards Institute
11 West 42nd Street
New York, New York 10036

Re: Comments on Proposed BSR/IEEE C95.1 Draft Standard, safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz (revision of ANSI C95.1-1982).

Dear Sirs:

This letter is being submitted in response to the December 27, 1991 ANSI Standards Action newsletter requesting comments from interested parties on various proposed standards. It is our understanding that this Proposed Standard is still within the BSR process.

Our major problem with the standard is its use of arbitrary breakpoints in frequency for changes in exposure limits. The predominant sources of RF radiation are radio and television stations. The literature cited by the Standard does not support the 100 MHz breakpoint for conducted body current. A single research paper does not in our opinion does not suffice for the frequency selected by the standard. Further scientific research should in our opinion be undertaken before setting a breakpoint that will cause what maybe un-necessary financial expense to radio stations. The breakpoint picked is in the middle of the commercial FM band (88 - 108 MHz) why not utilize a frequency of 50 MHz, just above the Private Radio Frequency Band (FCC §90) as a breakpoint. With the breakpoint situated where it is, an FM station operating on an assigned frequency of 99.9 MHz will be treated differently from a station operating on an assigned frequency of 100.1 MHz. The effective radiated power of the stations could very by a vast amount with the station below the breakpoint at say 3500 watts and the station above the breakpoint operating at 100,000 watts.

As members of ANSI we are concerned that this standard will be adopted by the FCC to replace the ANSI C95.1-1982 standard presently utilized for RFR criteria, with out adequate scientific proof of the 100 MHz breakpoint for conducted body current measurements. We do not think that the adoption of the Draft Standard is in the best interests of ANSI the Standards Community or the Broadcasters of this Country.

Sincerely,

C.S.I. TELECOMMUNICATIONS

Michael S. Newman
Vice President, Engineering

DKS:MSN/cl

CC: Mr. A Lai ESCA
Mr. D.K. Shaffer, P.E. CSI Telecommunications

FAXED 12/9/92

Susquehanna Radio Corp.

Subsidiary of Susquehanna Pfaltzgraff Co.

140 EAST MARKET STREET, BOX 1432, YORK, PA 17405

(717) 852-2132
FAX (717) 771-1436

CHARLES T. MORGAN
Senior Vice President

December 9, 1992

Mr. Dane E. Ericksen
Hammett & Edison, Inc.
Consulting Engineers
Box 280068
San Francisco, CA 94128-0068

Ref: ANSI approval of ANSI/IEEE C95.1-1992

Dear Mr. Ericksen:

Susquehanna Radio Corp. and its subsidiaries are the licensees of ten FM radio stations operated throughout the United States. It is difficult to believe that a consensus has been reached in the above-captioned standard and we support your move to have it appealed.

It is my understanding that this standard is either mainly or solely based upon a paper by Jin-Yuan Chen and Om P. Gandhi. Although I have no direct knowledge to question the basis for their conclusions, I do question the arbitrary use of 100 mHz as the cut-off point for this standard.

Most of the work detailed in the above-mentioned paper deals with frequencies of 60 mHz or lower and Figure 9 very distinctly shows that radiation above 88 mHz is flat. Why the cut-off point of 100 mHz was chosen is certainly not supported by this document.

Since the FM transmitting band is located between 88 and 108 mHz, it makes a lot of sense to have this cut-off point at or below 88 mHz.

FM broadcasters have many good reasons to co-locate their transmission sites and quite often utilize the same antenna. This is a practice which will probably occur more often in the future. Applying this standard to half this band has no merit and would make testing to ensure compliance a nightmare.

Good luck in your efforts to have this standard revoked.

Sincerely,

Charles T. Morgan

CTM/mek

Capital Cities/ABC, Inc. 77 West 66 Street New York NY 10023 (212) 456 7777

December 9, 1992

Mr. Dane E. Ericksen
Hammett & Edison, Inc.
Consulting Engineers
Box 280068
San Francisco, CA 94128-0068

Ref: ANSI approval of ANSI/IEEE C95.1-1992

Dear Mr. Ericksen:

I am the engineer assigned responsibility for electromagnetic radiation hazard compliance for Capital Cities/ABC,Inc.

I wish to advise you that Capital Cities/ABC, Inc., supports your appeal of the above-captioned standards approval on grounds of lack of consensus. We cannot concur with this standard. I have found two serious deficiencies with this proposed standard revision, either one of which by itself would be fatal to proper implementation of the standard.

1. Since the impedance of the human body is included as a variable in the measurement process, measurements made by different operators would be different. Measurements must be repeatable. If a reference human is to be assumed for measurement purposes, the standard must say so rather than leave the matter up to interpretation.

2. The choice of the frequency 100 MHz for the cut-off point for body current limits appears to be arbitrary and capricious. In our review of the literature available to us concerning coupling of electromagnetic fields to humans and resulting biological effects, we see no justification for setting the cut-off frequency above 80 MHz. On the other hand, defining the cut-off frequency as 100 MHz, bisecting the FM Broadcast band, would cause serious competitive disadvantages to some FM Broadcasters with respect to others in multistation markets. A 100 MHz breakpoint would also cause serious practical difficulties with respect to inclusion and exclusion of measured energy present at a joint site, leading to increased doubt in measured data and unnecessary expenditure of resources in determining compliance. Setting the breakpoint to 82 MHz, at the breakpoint between TV Channels 5 and 6, would resolve both problems since stations on those two channels cannot coexist in the same area and only electromagnetic energies which published research indicates as having significant biological effect would be considered.

Very truly yours,

Michael V. Chiarulli, P.E.
Manager, Telecommunications Engineering

EXHIBIT 17

American National
Standards Institute 11 WEST 42ND STREET, NEW YORK, NEW YORK 10036
TEL. 212.642.4900
FAX. 212.398.0023
Cable: Standards, New York
International Telex: 42 42 96 ANSI UI
D-U-N-S 07-329-4837

December 18, 1992
Our Ref: BSR LB 2850 & 2850a

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Dane E. Ericksen
Hammett & Edison, Inc.
P.O. Box 280068
San Francisco, CA 94128-0068

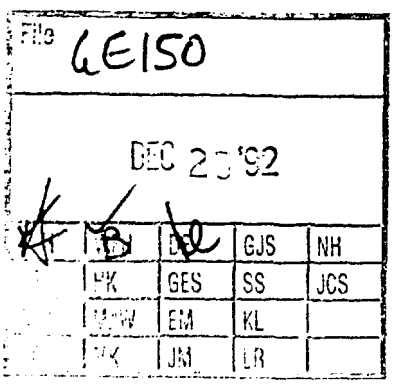
Re: Appeal of Board of Standards Review Action to Approve ANSI/IEEE C95.1-1992 as an American National Standard

Dear Mr. Ericksen:

This will formally acknowledge reciept of your letter of December 10, 1992 appealing the decision of the Board of Standards Review (BSR) to approve as an American National Standard, ANSI/IEEE C95.1-1992, Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields (300 kHz to 100 Ghz). The Action of the BSR taken on November 18, 1992 to approve this standard is hereby suspended pending adjudication of the appeal.

A hearing date has been scheduled for Thursday, February 4, 1993, ANSI Headquarters at 1:30 p.m. Please advise me, at your earliest convenience, whether the scheduled date is acceptable to you and who your representative(s) will be.

The BSR policy is to have the appellant present the appeal case, followed by the respondent. A half hour is allotted for each side with a limit of three (3) speakers per side, followed by a questions and answer period. At the hearing both sides are required to provide the BSR Secretary with 20 written copies of all presentations made at the hearing for distribution to BSR members and inclusion in the official record. After the question and answer period, the BSR will go into executive (closed) session and the subsequent action taken will be communicated to both sides by letter.



A copy of your appeals statement will be provided to the IEEE for response. You will be provided with a copy of that response. Please be advised that no reply to the response prior to the forthcoming hearing shall be permitted absent a showing of good cause and need therefore.

Sincerely,

Beth Somerville

Beth Somerville, Secretary
Board of Standards Review

cc: Case file
Chair, BSR
L. Gargiulo
G. Kushnier
A. Lerner
J. Richardson
F. Schrotter
J. Smith
SB Chair
SB Secretary

BS/1408X

EXHIBIT 18A

Capital Cities/ABC, Inc. 77 West 66 Street New York NY 10023 (212) 456 7777

December 9, 1992

Mr. Dane E. Ericksen
Hammett & Edison, Inc.
Consulting Engineers
Box 280068
San Francisco, CA 94128-0068

Ref: ANSI approval of ANSI/IEEE C95.1-1992

Dear Mr. Ericksen:

I am the engineer assigned responsibility for electromagnetic radiation hazard compliance for Capital Cities/ABC,Inc.

I wish to advise you that Capital Cities/ABC, Inc., supports your appeal of the above-captioned standards approval on grounds of lack of consensus. We cannot concur with this standard. I have found two serious deficiencies with this proposed standard revision, either one of which by itself would be fatal to proper implementation of the standard.

1. Since the impedance of the human body is included as a variable in the measurement process, measurements made by different operators would be different. Measurements must be repeatable. If a reference human is to be assumed for measurement purposes, the standard must say so rather than leave the matter up to interpretation.

2. The choice of the frequency 100 MHz for the cut-off point for body current limits appears to be arbitrary and capricious. In our review of the literature available to us concerning coupling of electromagnetic fields to humans and resulting biological effects, we see no justification for setting the cut-off frequency above 80 MHz. On the other hand, defining the cut-off frequency as 100 MHz, bisecting the FM Broadcast band, would cause serious competitive disadvantages to some FM Broadcasters with respect to others in multistation markets. A 100 MHz breakpoint would also cause serious practical difficulties with respect to inclusion and exclusion of measured energy present at a joint site, leading to increased doubt in measured data and unnecessary expenditure of resources in determining compliance. Setting the breakpoint to 82 MHz, at the breakpoint between TV Channels 5 and 6, would resolve both problems since stations on those two channels cannot coexist in the same area and only electromagnetic energies which published research indicates as having significant biological effect would be considered.

Very truly yours,

Michael V. Chiarulli, P.E.
Manager, Telecommunications Engineering

EXHIBIT 18B

Susquehanna Radio Corp.

Subsidiary of Susquehanna Pfaltzgraff Co.

140 EAST MARKET STREET, BOX 1432, YORK, PA 17405

(717) 852-2132
FAX (717) 771-1436

CHARLES T. MORGAN
Senior Vice President

December 9, 1992

Mr. Dane E. Ericksen
Hammett & Edison, Inc.
Consulting Engineers
Box 280068
San Francisco, CA 94128-0068

Ref: ANSI approval of ANSI/IEEE C95.1-1992

Dear Mr. Ericksen:

Susquehanna Radio Corp. and its subsidiaries are the licensees of ten FM radio stations operated throughout the United States. It is difficult to believe that a consensus has been reached in the above-captioned standard and we support your move to have it appealed.

It is my understanding that this standard is either mainly or solely based upon a paper by Jin-Yuan Chen and Om P. Gandhi. Although I have no direct knowledge to question the basis for their conclusions, I do question the arbitrary use of 100 mHz as the cut-off point for this standard.

Most of the work detailed in the above-mentioned paper deals with frequencies of 60 mHz or lower and Figure 9 very distinctly shows that radiation above 88 mHz is flat. Why the cut-off point of 100 mHz was chosen is certainly not supported by this document.

Since the FM transmitting band is located between 88 and 108 mHz, it makes a lot of sense to have this cut-off point at or below 88 mHz.

FM broadcasters have many good reasons to co-locate their transmission sites and quite often utilize the same antenna. This is a practice which will probably occur more often in the future. Applying this standard to half this band has no merit and would make testing to ensure compliance a nightmare.

Good luck in your efforts to have this standard revoked.

Sincerely,

Charles T. Morgan

CTM/mek

EXHIBIT 18C

CBS
RADIO
A Division of CBS Inc.
51 West 52 Street
New York, New York 10019
(212) 975-4321

File 6E150

JAN 25 '93

RLH	WEH	BE	GJS	NH
EE	HK	GES	SS	JCS
RSJ	MAW	EM	KL	
JT	MK	JM	LR	

Ms. Beth Somerville, Secretary
Board of Standards Review
American National Standards Institute
11 West 42nd Street
New York, N.Y., 10036

January 14, 1993

RE: ANSI/IEEE C95.1-1992, Appeal of Hammett and Edison, Inc.

Dear Ms. Somerville:

By way of this letter, The CBS Radio Division, a Division of CBS Inc., would like to add its support to the appeal of the consulting engineering firm of Hammett and Edison, Inc. seeking to have the ANSI/IEEE C95.1-1992 standard revoked.

The CBS Radio Division owns 13 FM radio stations, and 8 AM radio stations, and is the largest group owner of radio stations in the country (Broadcasting magazine, November 16, 1992, page 55). Our support of the revocation of this standard is based on lack of consensus. In addition to our own support for revocation of this standard, we have been supplied with copies of letters from Group W (Westinghouse Broadcasting), and Capital Cities/ABC, the number 2 and 3 group owners in the country, which show their support for the revocation of this standard. In addition, the National Association of Broadcasters, which represents **HALF** of the radio stations in this country supports the revocation of this standard, along with other group owners and interested parties.

Our main objection to this standard is the apparently arbitrary selection of 100 MHZ as the break point for induced body currents. It is our understanding that the C95.1-1992 standard is largely or entirely based on a paper by Chen and Ghandi (1988), which discusses **calculated** currents induced in an anatomically based model of the human body when exposed to RF radiation. Figure 9 in this paper clearly shows a peak in the standard absorption rate at 60 Mhz, and a **rapid** decline in the SAR between 60 and 80 Mhz, and remaining constant at a low level above 80 Mhz. It should also be noted that, although the calculated data appears to agree with the experimental data of Hill, the Hill data only goes up to 40 Mhz. This data provides no justification for the selection of the 100 Mhz break point, either from the calculated data, which declines rapidly after 60 Mhz, and shelves at a low level after 80 Mhz, or from the experimentally measured data, which has no information above 40 Mhz.

Figure 16 of this same paper shows the relationship of currents induced in the foot versus frequency. Again, we see the peak in induced currents around 50 Mhz in both the calculated and measured

data, and a rapid decline after that. Indeed, there is no calculated data above 70 Mhz, and no measured data above 50 Mhz., and no justification provided to extrapolate the data to frequencies above those mentioned. As a mater of fact, the paper mentions the rather large discrepancy between the calculated and measured data, and says about this discrepancy "This may be due to the relative crudeness of the present model or lack of accuracy of the measured data. Further work is certainly needed to resolve this discrepancy." The CBS Radio Division concurs with the statement, and points out that it is unwise to adopt a standard based on data that the collector admits may be in error.

We see no justification for the establishment of 100 Mhz as the break point for this standard, and, as a matter of fact, we feel the data supports a break point no higher than 80 Mhz, and perhaps as low as 40 Mhz. It has been suggested that, since standards are under constant review, the break point issue could be revisited in a future review cycle. This would be reasonable **if** the 100 Mhz break point was supported by the currently available data, which it is not. It is improper to establish the break point at 100 Mhz when the data does not support this. It would be much more reasonable to establish the break point at a lower frequency that is supported by the data, and then to raise the break point, when and if the further work suggested by Chen and Ghandi is carried out, **and** that work suggests a higher break point is reasonable.

On the practical side, establishing the break point at 100 Mhz puts it right in the middle of the commercial FM radio band. This is highly undesirable, as it would cause those stations under 100 Mhz to have to carry out additional measurements, while exempting those above 100 Mhz from having to do so. This would be a clear competitive disadvantage to those station under 100 Mhz. It also would make measurements at multiple user sights unwieldy. It would be extremely difficult to make measurements at a site with a dozen radio stations. How would one measure the contribution of those stations below 100 Mhz, while ignoring the contribution of those station above 100 Mhz? It could be done, but it would be a measurement and/or a coordination nightmare. Also, the present state of the art seems to make the measurements required to comply with this standard very prone to operator error, and are unrepeatable. Especially at a multiple user site, sharing the cost for correction of excess body currents would probably be apportioned among the site users in relation to their contribution to the fields that cause the currents, accuracy and repeatability of the measurements is a practical necessity. Again, if the 100 Mhz breakpoint were supported by the data, ways could and would have to be devised to comply with the standard, however complex and unwieldy they might be, but since the data does **not** support the 100 Mhz break point, the extra complex and unwieldy measurements are unfairly and unreasonably burdensome to an entire class of broadcasters. The review board must realize that for a standard to have any meaning, it must be practical to implement the standard. The break point in the instant standard has no basis in the collected data, either calculated or measured, and it is not

practical to implement.

In conclusion, we believe the above discussion demonstrates why the C95.1-1992 standard should be revoked. There is a clear lack of consensus in the industry, as shown by the fact that the top three radio broadcasters in the country, as well as the trade association representing half of all radio stations in the country support the revocation of this standard.

Sincerely:
CBS Radio Division

Alan W. Parnau, P.E.
Director, Transmission Systems

CC: Mr. Dane Ericksen, Hammett and Edison
Mr. Anthony Masiello, VP Technical Operations, CBS Radio

EXHIBIT 18D

National Association of
NAB
BROADCASTERS

Michael C. Rau

Senior Vice President
Science and Technology
1771 N Street, N.W.
Washington, DC 20036-2891
(202) 429-5346
Fax: (202) 775-4981
Cellular: (202) 494-4849

By fax: 212-398-0023

December 21, 1992

Ms. Beth Somerville
Secretary, Board of Standards Review
American National Standards Institute
11 West 42nd Street
New York, NY 10036

Re: Appeal to ANSI's approval of ANSI/IEEE C95.1-1992. Your Reference: BSR LB 2850 & 2850A.

Dear Ms. Somerville:

The National Association of Broadcasters (NAB) is a trade association representing over 5000 U.S. radio and television broadcasters and we are an organizational member of ANSI.

NAB has just learned of the November 18 action by the ANSI Board of Standards Review (BSR) adopting IEEE standard C95.1-1991, *Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, as the successor to ANSI standard C95.1-1982. NAB wishes to appeal this action of the BSR on the grounds that ANSI/IEEE C95.1-1992 does not represent industry consensus.

NAB takes this position because ANSI/IEEE C95.1-1992 includes a 100 MHz termination point for conducted body current requirements. The specification of 100 MHz is undesirable because it falls in the center of the FM broadcast band (88 - 108 MHz). Thus, one segment of the broadcast industry would be required to meet the conducted body current criteria while others would be exempt. Further, body current conditions are known to vary between persons of different body types and this is likely to result in inaccurate and non-repeatable measurements making it impossible for broadcasters to demonstrate compliance with the new standard.